

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 34.

February, 1932.

No. 398.

SOME GENERA AND SPECIES OF RAFINESQUE

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CONSTANTINE SAMUEL RAFINESQUE [SCHMALTZ], the most erratic student of the higher plants, has made unending trouble for American and (although they apparently do not realize it) European botanists. Much of his work (like his segregation of *Carex* into many genera, often with the same species as types of different genera) was obviously the product of an abnormal mind; much of it is too obscure for clarification; but some of his books, for instance his extensive *Autikon Botanikon*,¹ contain accurate descriptions of genera and species which it is a duty to maintain. The task of sifting the comparatively few perfectly sound grains from the chaff and the distorted or unrecognizable grains is a thankless one and, above all, it should be undertaken only by those with intimate knowledge of the floras concerned. In any other hands the interpretation of Rafinesque might often lead to confusion and the perpetuation of doubtful names.

I should have, consequently, the gravest misgivings if assigned the unwelcome task of interpreting much of Rafinesque's publication. A few cases, however, have recently come to my attention in which the current names of familiar plants are necessarily altered by the valid and quite clear publication of Rafinesque. These are discussed below.

TRILLIUM **Gleasoni**, nom. nov. *T. declinatum* (Gray) Gleason, Bull. Torr. Bot. Cl. xxxiii. 389 (1906), not Rafinesque, *Autikon Botanikon*, 135 (1840). *T. erectum* var. *declinatum* Gray, Man. ed. 5: 523 (1878).

¹ This, one of the most significant works of Rafinesque, with "Botanical illustrations [*i. e.* diagnoses] of 2500 New . . . Plants," published in 1840, has unfortunately, not yet been admitted to *Index Kewensis*; consequently, many names now current are upset by its well published genera and species.

Rafinesque's *Trillium declinatum* was from Alabama and Florida, a plant with oblong or elliptical leaves said by its author to be near *T. Catesbaei* Ell. It is very different from *T. declinatum* of Gleason, a northern plant with broadly rhombic leaves. Since the name *T. declinatum* is preoccupied by the southern plant it is a pleasure to associate with the broad-leaved northern species the name of the botanist whose study established its specific value.

LYCHNIS (§ MELANDRIUM) **furcata** (Raf.), comb. nov. *Silene* (*Viscago*) *furcata* Raf. Autikon Botanikon, 28 (1840). *L. affinis* J. Vahl, in Fries, Mantissa, iii. 36 (1842) as to Greenland reference only, not the Finmark plant described. *Melandrium affine* J. Vahl in Fl. Dan. xiv. fasc. xl. 5, obs. sub t. mmccclvi. (1843).

Lychnis furcata is the very characteristic plant of Greenland, Arctic America and northern Labrador and perhaps of Spitzbergen which has been passing as *L. affinis* J. Vahl in Fries, Mantissa, iii. 36 (1842) or *Melandrium affine* J. Vahl in Fl. Dan. xiv. fasc. xl. 5, obs. sub t. mmccclvi. (1843) or *Wahlenbergella affinis* (J. Vahl) Fries, Bot. Not. (1843) 143. Rafinesque's specific name should be taken up not only because it antedates *L. affinis* by two years but because it belongs to an apparently quite distinct and more arctic species than the Lapland plant which should stand as true *L. affinis*. To be sure, Ostenfeld urged the taking up for these plants of the still earlier name *L. pauciflora* Ledeb. Mém. Acad. Imp. Sc. St. Petersb. v. 537 (1815) and published the combination *Melandrium pauciflorum* (Ledeb.) Ostenf. Meddel. om Grønland, lxxv. 173 (1923); but Hultén definitely shows¹ that Ledebour's *L. pauciflora* was a mixture, the type-sheet preserved in Herb. Hort. Petrop. consisting partly of the circumpolar *L. apetala* L. (1753), partly of the Asiatic *L. brachypetala* Hornem. (1819), and he rightly refrains from using the Ledebour name, since Ledebour's description was based on a mixture of two species (*nomen confusum*).

It has been customary to regard as one species, *Lychnis affinis*, the plants of the arctic and subarctic areas and to give the entire series the name *Lychnis affinis* or *Melandrium affine*, an interpretation reflected in the broad range given by Hultén, whose detailed statements of distribution are so unusually complete:

"Geographical area: Europe: very rare in northern Scandinavia and on Kola; Spitzbergen, Nova Zembla, Arctic Russia, in the Urals at least to Sob river (!). Asia: from Jalma and the mouth of Yenisei (!)

¹ Hultén, Fl. Kamtch. ii. 91 (1928).

to the mouth of Lena (!) and Chukch Penins., southwards to Vilju distr., Jakutsk distr. and southern Kamtchatka. Also in the mts. of Central Asia southwards to Pamir and Himalaya. America: Arctic Alaska to Ellesmereland, Baffin Land, Hudson Bay and Labrador, southwards to Alberta acc. to RYDBERG. W. Greenland from about 66° N. lat. northwards, E. Greenland from Scoresby Sound northwards.”¹

Lychnis affinis was originally described by Fries from Finmark, his very detailed description applying primarily (if not entirely) to the Lapland plant and his citation of specimens covering the Lapland (Finmark) plant only: “Ad Alten Finmarkiae occidentalis locis graminosis herbidis. *Laestadius*, *Vahl*,² *Blytt*.” Unfortunately, however, Fries gave two manuscript names in synonymy:

“*Lychnis affinis*. *J. Vahl*! *Fl. Gr. Mscr.*
L. Dorothea. *Laestad*!”

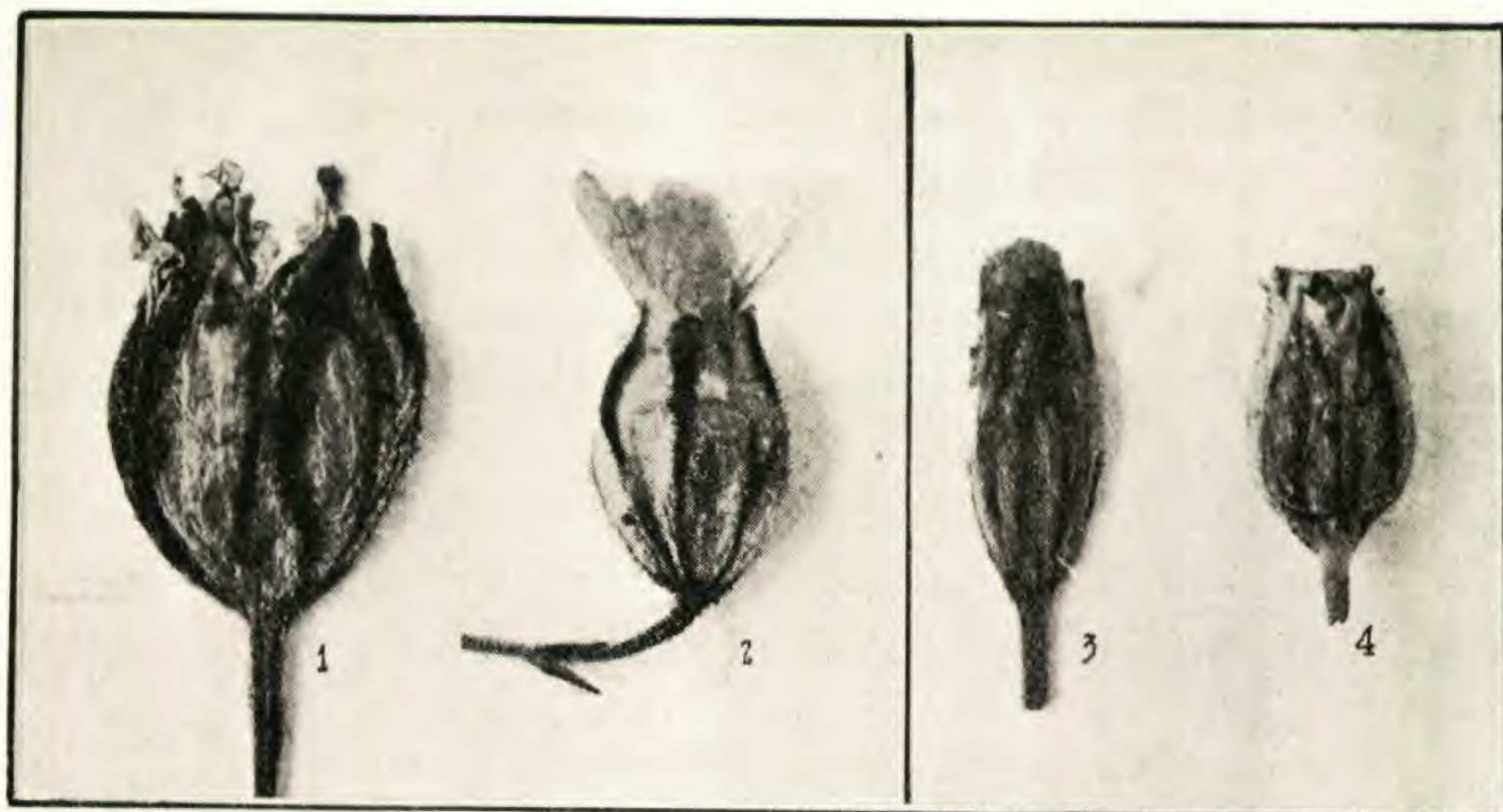
It is evident that Fries, describing and citing only the Finmark plant from material collected there by *Laestadius*, M. Vahl and Blytt, rejected the unpublished name which *Laestadius* had assigned it and, unhappily, took up for the Finmark plant a manuscript name which J. Vahl was applying to the quite different plant of Greenland, a plant which J. Vahl formally published the next year as *Melandrium affine*. The Lapland plant should, therefore, be called *L. affinis* of Fries, not of “(J. Vahl) Fries,” since Fries’s ascribing of it to J. Vahl was due to his misidentification of the Greenland plant of J. Vahl.

The distinctive characters of the two plants are given below and the quite different calices and the seeds are well brought out in the figures: FIG. 1 a characteristic fruiting calyx of *L. furcata* from Labrador (*Woodworth*, no. 219¹/₂), FIG. 2, a flowering calyx from Greenland (Godhaven, *Porsild*), FIG. 3 a flowering calyx of *L. affinis* from Torne Lappmark (*Alm*), FIG. 4 a fruiting calyx from Torne Lappmark (*Samuelsson & Zander*), FIG. 5 seeds of the latter, FIG. 6 seeds of *L. furcata* from Greenland (*Porsild*); the calices $\times 1\frac{3}{4}$, the seeds $\times 10$.

L. FURCATA. Surfaces of upper (and commonly the lower) leaves more or less pubescent: flowering calyx inflated, ellipsoid-campanulate, 5–10 mm. in diameter; fruiting calyx urceolate or gibbous-campanulate, 10–15 mm. long, up to 12 mm. thick, the lobes deltoid to semi-orbicular; veins dark-purple, the principal ones oblanceolate or spatulate, 1–2 mm. broad above the middle; intermediate veins

¹ Hultén, l.c. ii. 92 (1928).

² Martin Vahl, not the younger J. Vahl.



Figs. 1 and 2, Calices of *LYCHNIS FURCATA*, $\times 1\frac{3}{4}$; figs. 3 and 4, of *L. AFFINIS*, $\times 1\frac{3}{4}$. (Photos. by *H. M. Raup*.)

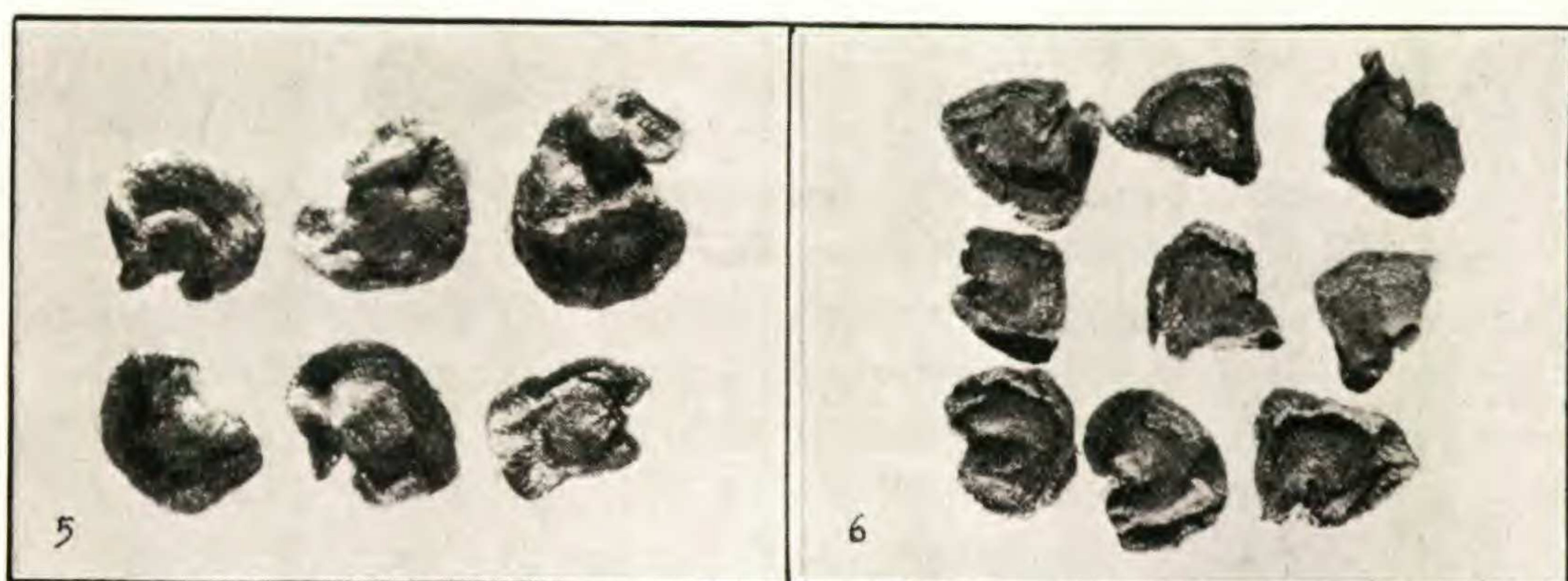


FIG. 5, Seeds of *LYCHNIS AFFINIS*, $\times 10$; fig. 6, of *L. FURCATA*, $\times 10$. (Photos. by *H. M. Raup*.)

coarse, oblanceolate, simple or rarely forking at tip: petals with a pair of oblong appendages: capsules 10–15 mm. long; the tips of the valves (before splitting) 2–4 mm. long: wing mostly narrower than the body of the seed.—Greenland, Arctic America and northern Labrador; ?Spitzbergen.

L. AFFINIS. Surfaces of upper leaves glabrous or essentially so: flowering calyx slenderly ellipsoid-cylindric, 3–6 mm. in diameter; fruiting calyx 10–12 mm. long, 5–7 mm. thick, the lobes oblong-ovate; veins green or purple, the principal ones linear to linear-oblanceolate, mostly only 0.2–0.5 mm. broad, rarely 1 mm. broad at summit; intermediate veins delicate, linear-filiform, often forking from near the middle: petals of pistillate flowers unappendaged: capsules 9–11 mm. long; the tips of the valves (before splitting) 1–3 mm. long: wing mostly as broad as or broader than the body of the seed.—Arctic Europe.

All material which I have seen from Greenland, Labrador and arctic America forms a consistent species apparently quite distinct from the plant of Finmark and Torne Lappmark. The Spitzbergen material before me is not in satisfactory condition but it seems to be *L. furcata*. I have seen no good specimens from Nova Zembla, arctic Russia and Asia and am, therefore, unable to say whether they belong with *L. furcata* or *L. affinis* or connect the two. Some of the specimens from northwestern America, especially from Yukon and Alaska, are not satisfactorily placed in the two species as here defined, and fuller collections are needed from that area before they can be properly worked out.

Rafinesque's description was as follows:

238, *SILENE* (*Viscago*) *furcata* Raf. pubescens, caule bifloro vel furcato, ramis unifl. fol. cuneatis acutis, superis lanceol. remotis paucis, cal. brevis teretis, dentib. latis, petalis brevis angustis bifidis—Labrador and Hudson Bay, remarkably like the last plant [*Physocarpon vespertinum* Raf., based on *Lychnis vespertina* Sibth.], but a real *Silene* not dioical and with 3 styles, smaller 4 to 6 inches high, calix and petals shorter, incarnate.

The plant of Labrador, Arctic America and Greenland is 0.5–3 dm. high, with simple or forking stems and 1–9 flowers, with calyx and petals very suggestive of those of *L. alba* Mill. (*L. vespertina*) but shorter; and the calyx strongly "incarnate," the petals white of roseate. It is obviously what Rafinesque was describing.

EUPHORBIA purpurea (Raf.), comb. nov. *Agaloma purpurea* Raf. Autikon Botanikon, 94 (1840). *E. nemoralis* Darl. Fl. Cestr. ed. 2: 518 (1837) not Salisb. Prodr. 390 (1796). *E. Darlingtonii* Gray, Man. 404 (1848).

Rafinesque's genus *Agaloma*, based on the white-flowered *Euphorbia corollata* L., was fully defined by him in *Flora Telluriana*, genus no. 1188, p. 116 (1838); and by those who see in it a genus the name *Agaloma*, with clear priority and validly published, should be used instead of *Tithymalopsis* Kl. & Garcke (1859) which was, likewise, based on *Euphorbia corollata*.

Rafinesque's description of *Agaloma purpurea* is unequivocal:

655, *AGALOMA* (Raf. fl. tell. 1188) *purpurea* Raf. glabra caule elato angul. striato fistuloso, fol. lanceol. acutis basi attenuatis subtus glaucis; fl. ad apice axil, pedunc. unifl. invol. 2 delt. subflos, caps. glabris—very remarkable sp. of this G. linking with last, 3 feet high, leaves 4 inches long one broad, flowers not white as in most species but purple rather small: Glades of Pennsylvania Alleg. Mts. very rare.†

Darlington's original description of his *Euphorbia nemoralis* is strikingly like Rafinesque's account of *Agaloma purpurea*, though more detailed:

Stem 2 to 3 feet high, . . . smooth. . . . Leaves 3 or 4 inches long, and about an inch wide, . . . lance-oblong, and oblanceolate-oblong, rather acute . . . more or less tapering towards the base, . . . the under surface pale, or subglaucous, . . . Heads of florets in a terminal umbel . . . and also lateral, on slender axillary branches . . . ; *bracts* . . . wider than long, broadly ovate . . . ; *petaloid segments* of the involucre . . . purplish-brown within; . . . Capsule . . . often becoming nearly smooth.

Hab. Moist woodlands: not very common.

PYROLA MINOR L.

Some botanists¹ separate *Pyrola minor* from the other *Pyrolas* as a genus *Erxlebenia* Opiz (1852). They have overlooked the earlier and valid name *BRAXILIA* Raf. Autikon Botanikon, 102 (1840). Rafinesque's diagnosis was clear:

BRAXILIA Raf. diff. *Pyrola*, cal. 5^o part. petalis vix patens, stam. rectis brevis, stylo brevis recto, stigma 5 dent. & c.

Braxilia was launched with five Rafinesquian species: *B. parvifolia* (*Pyrola minor* L.), *B. media*, and three doubtful segregates from America.

PYROLA SECUNDA L.

Some botanists (not including myself) treat *Pyrola secunda* as a genus distinct from *Pyrola*. In doing so they² take up for the "genus" the name *Ramischia* Opiz (1852). There is an earlier and perfectly valid generic name in *ORTHILIA* Raf. Autikon Botanikon, 103 (1840). There can be absolutely no question about what Rafinesque intended:

ORTHILIA Raf. diff. *Pyrola*, cal. 5 dent. petalis campanulatis, stam. rectis, stylo elongato filif. recto, stig. 5 dent. caps 5 gona profunde umbilicata. *Caulib. ramosis, floribus racem. secundis.*

Rafinesque proposed three species, *O. parvifolia* Raf. (a renaming of European *Pyrola secunda*) and *O. procumbens* and *O. dentata*, variations of the plant in eastern North America.

SABATIA AMOENA (Raf.) G. Don, forma **albiflora** (Britton), comb. nov. *S. maritima* Raf. Med. Fl. 77 (1830). *S. stellaris* Pursh, forma *albiflora* Britton, Bull. Torr. Bot. Cl. xvii. 125 (1890).

Sabatia amoena (Raf.) G. Don, Gen. Syst. iv. 207 (1837) was based directly on *Chironia amoena* Raf. Desv. Journ. Bot. i. 224 (1809),³

¹ Rydb. N. Am. Fl. xxix¹. 28 (1914) *et al.*

² Rouy & Foucaud, Fl. France, iv. 16 (1897); Rydb. N. Am. Fl. xxix¹. 28 (1914) *et al.*

³ The title page of Desvaux's Journal de Botanique, tome 1, is dated 1808, but Rafinesque himself stated in Atlantic Journal, i. 207 ("Winter of 1833") in his *Cronological Index* of his own botanical writings, that the paper was "re-printed in Desvaux' Journal of Botany, Paris, 1809." Desvaux complicated the question by himself stating in a volume dated 1814 that "*Nous avons publié en 1810, deux Volumes de 384 pages chacun et de 12 gravures*" (see Fernald, RHODORA, xxix. 227 (1927). Since Vol. 1 (dated 1808) is the only one of the two volumes with 384 pages and 12 plates (Vol. 2 having 384 and 13 plates), we have Desvaux's word that it did not come out until 1810.

which was the French translation of the original description in English previously published by Raf. Med. Repos. hex. ii. v. 359 (1808). It has been customary to refer *Chironia amoena*, consequently *Sabatia amoena*, to the synonymy of *S. gracilis* (Michx.) Salisb. (1806), based on *Chironia gracilis* Michx. (1803) or to that of *S. campanulata* (L.) Torr. (1824) based on *Chironia campanulata* L. (1753). But the whole matter has been sadly confused. *S. campanulata* is a perennial with numerous branches springing from a subligneous base and having erect or strongly ascending, naked or nearly naked peduncles, and flowers 2–3.5 cm. broad. It occurs on damp and fresh (acid) sandy and peaty soils of southern Massachusetts; from Monmouth County, New Jersey to Bucks County, Pennsylvania; and from the mountains of North and South Carolina and Tennessee southward to southern Georgia and southern Alabama. South of Monmouth County, New Jersey it is not a coastal plant. *S. gracilis*, like *S. campanulata*, is a perennial with subligneous rhizomes; but its branches are more divergent and leafy and terminated by rather smaller flowers (mostly 2–2.5, rarely –3 cm. broad). Its upper leaves and calyx-lobes are more slender than in *S. campanulata*. It seems to be a rather well defined species, occurring from eastern North Carolina to middle Georgia and northwestern Florida, west to Louisiana; but it may be better to treat it as a southern coastwise variety of *S. campanulata*. Whether it be considered a species or a variety, it seems to be unknown along the coast north of North Carolina.

Rafinesque's *Chironia amoena* was the sea-shore plant of Maryland, Delaware and New Jersey, *i. e.* *S. stellaris* Pursh, Fl. Am. Sept. 1. 137 (1814), an annual or biennial species with solitary stems and without a caudex. This plant is very characteristic of the sea-shore of these and adjacent states and there seems to be no reason why Rafinesque's description does not apply to it. To be sure, he states that the calyx is equal in length to the corolla, while Pursh says that it is "semibreviore," but as already pointed out by Bicknell this character is "unstable in a very marked degree,"¹ an observation which I promptly indorsed,² since the specimens show plenty of calyx-lobes equaling or even longer than the corolla-lobes. Bicknell and later I, in the same discussions, emphasized the acute, lanceolate leaves of *S. stellaris* as opposed to the obtuse and linear or linear-oblong leaves of *S. campanulata*.

¹ Bicknell, Bull. Torr. Bot. Cl. xlii. 31 (1913).

² Fernald, RHODORA, xviii. 145 (1916).

With these points in mind it will be seen that there is not much difference between the description of *S. stellaris* by Pursh and of *Chironia amoena* by Rafinesque.

Pursh's description read:

2. *S. erecta*; ramis dichotomis elongatis 1-floris, foliis *stellaris* lanceolatis acutis, calyce subulato corollae semi-breviore, laciniis corollae obovatis, caule tereti.

Icon. *Bartram ic. ined. t. 13, in Musaeo Banksiano.*

In salt marshes: New York, New Jersey, &c. ♂.

Aug. v. v. The flowers are large and a beautiful rose colour, with an elegant yellow star in the centre, which is surrounded by a deep red border; . . . It varies with white flowers.

Rafinesque's account, except for the point noted, was nearly the same:

6. *Chironea amoena*, graceful *chironia*; stem cylindrical, dichotomous, leaves narrow-lanceolate, acute, flowers terminal, calix equalling in length the corolla, which is wheeled; grows on the sea-shores of Maryland, Delaware, and Jersey; the flowers are rose-colour, with a double star in the centre, the interior one yellow, the exterior one red. A variety has white flowers, with the same star.

Somewhat later, Rafinesque described the white-flowered form as *Sabatia maritima* Raf. Med. Fl. 77 (1830).

A NOTE ON *SALIX DODGEANA*.—While making a study of the willows of Wyoming in the summer of 1930, the writer noticed a specimen of *Salix Dodgeana* in the Rocky Mountain Herbarium which varied somewhat from material from the type locality. On July 27, 1931, the writer visited the type locality, collecting many specimens of the plant. Comparison with these indicated the first-named specimen to represent a distinct form.

SALIX DODGEANA Rydb. Bull. N. Y. Bot. Gard., 1. 277 (1899); Ball in Coulter and Nelson, New Manual of Rocky Mountain Botany, 131-132 (1909); Rydberg, Flora of the Rocky Mountains and Adjacent Plains, 195 (1917); Schneider, Bot. Gaz. 28. 38, 54-55. (1919); Hawkins, Trees and Shrubs of Yellowstone Natl. Park, 62. (1924).—Wyoming, Montana. Specimens examined: MONTANA, type locality: Electric Peak, Yellowstone Natl. Park, alt. 10,000 feet, August 18, 1897, P. A. Rydberg, Ernst A. Bessey no. 3921, three sheets.

SALIX DODGEANA Rydb. forma **subrariflora**, f. nov. A forma typica differt foliis ovatis ad suborbicularibus; amentis feminis 3-pluris floris; stylo praesenti, minus quam 1 mm. longo.—WYOMING: